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ABSTRACT

There is a significant mismatch of student preparation for college-level reading tasks and literacy demands placed on our liberal arts college students today. Widely accepted schema theory suggests that teaching metacognition, or consciously thinking about how one thinks, is helpful. Once thinking processes are made transparent to the learner, he can monitor when thinking has broken down and know when and why to activate literacy strategies. Instructors may also help at-risk students by focusing on the concepts that underlie content and the interrelationships between and among ideas. This document describes the creation of a college course that aimed to provide authentic literacy experiences and explicitly teach literacy strategies. Graphic organizers were designed to represent the thinking processes that typify interactive reading. Top-down visuals--chains, planning charts or flow charts, scales for weighing arguments, and concept maps, for example--can anchor abstract concepts and help with problem solving. Bottom-up visuals like pie charts, grids, and graphs can help students scan, sort, and organize information. Both can be instrumental in facilitating learning strategies in the at-risk student. Seven figures show examples of the graphic organizers. (BEW)

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Graphic Learning Strategies for At-Risk College Students

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by Peggy A. P. Pruisner

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Literacy Preparation

There is a significant mismatch of student preparation for college-level reading tasks and the literacy demands placed upon our liberal arts college students today. Many were elementary students who received isolated, skill-based instruction; ironically, we often continue to provide instruction for these students today at the skill level, once again focusing only on bottom-up processing. Furthermore, we continue to rely on written language to facilitate verbal learning when an alternative organizer might better frame student thinking and processing of text, in reading and writing, as well as in other literacy tasks. As new paradigms move beyond the mastery of a discrete number of subskills, the focus shifts to more integrated theories.

In the field of reading, widespread acceptance of schema theory (Rumelhart, 1980) and the recognition of reading as the interaction of reader and text has resulted in two important instructional considerations: metacognition and sensitivity to the structure of text and the interrelationships between and among ideas (Applegate, Quinn, & Applegate, 1994). To teach and guide metacognition, consciously thinking about how one thinks, instruction must be based on the thinking processes. Those processes must be made transparent to the learner through awareness of thinking, monitoring when thinking has broken down, and activating strategy use, in other words, knowing when and why to use literacy strategies. Furthermore, instruction needs to focus on the structure of knowledge and the concepts that underlie content, so the relationships among ideas can be clearly identified by learners. Concise portrayal of those relationships and linkages in thinking and in text can be made using graphic organizers or representations (Clarke, 1991).

Curriculum for the At-Risk

To prepare college students identified as academically at-risk due to deficiencies in study and reading skills, we undertook the task of creating a course that would provide authentic experiences in literacy. A foundational studies course that places heavy reading, writing, and information seeking demands on students was selected and an accompanying course, LS 101:Learning Strategies, was developed. The metacurriculum formed by combining the two courses provided authentic literacy tasks whereby the strategies could be explicitly taught, practiced, and guided until they were under the control of the independent learners (Ackerman & Perkins, 1989).

To represent the thinking processes that undergird reading, writing, and information seeking, graphic representations were designed. Since reading was designated as the main criteria for identifying academically at-risk students, schema theory and the interactive model of reading were kept central to curricular decision making. Consequently, the graphic representations needed to reflect both the top-down and bottom-up processes that typify interactive reading and mimic the hierarchic structures of the mind. Since graphics can represent both deductive and inductive processing, the organizers had to be selected according to the thinking process required for the given literacy task. Furthermore, to present explicit instruction that would lend itself to

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the fading of teaching strategies and the building of learning strategies controlled by the at-risk learner, standard or commonly recognized graphic representations were designed and used in the initial instruction.

Thinking and Graphics

Graphics can represent the many forms of thinking. Teachers need to select a graphic that fits the content or the objective and the thinking process involved, and the match needs to be explained to the students at the instructional stage. Graphics can represent both top-down and bottom-up thinking.

Clarke (1991) suggests that top-down graphics aid deductive thinking and anchor abstract concepts, processes, rules, or procedures. Top-down visuals can test ideas against facts or solve specific problems by using concept maps to relate ideas to facts or ideas to other ideas, by using weighing scales, continuum lines, or pro/con charts to weigh evidence in support of opposing arguments, using force field diagrams to observe antithetical forces, using causal chain maps to see a model of a process, and using decision trees and if/then flow charts to assist in deciding between two choices. Finally, planning charts, path models, and procedural flow charts can be used to work through specific steps in a task. In contrast, bottom-up graphics that help students scan, sort, and organize information can include the following: time lines for representing chronological events to show trends, recurring patterns, or causes and effects; web diagrams to tie related events to a concept or idea; circle diagrams to guide students to illustrative group events; data grids, pie charts, and graphs to help count recurring events and draw inferences; Venn diagrams and complex matrices to help sort information into multiple categories; and inductive towers to help connect factual information and draw inductive inferences as the basis for theories and predictions.

Similarly, Rakes, Rakes and Smith (1995) recommend the thinking processes involved in analysis, organization, and categorization be presented using the following graphic techniques: semantic maps, flow charts, labeling, tracing, text clues, adjunct questions, and drawings; the thinking involved in elaboration: drawings, charts, graphs, maps, and icons; and the thinking involved in integration: drawings, text questions accompanied by visuals, and pseudographics.

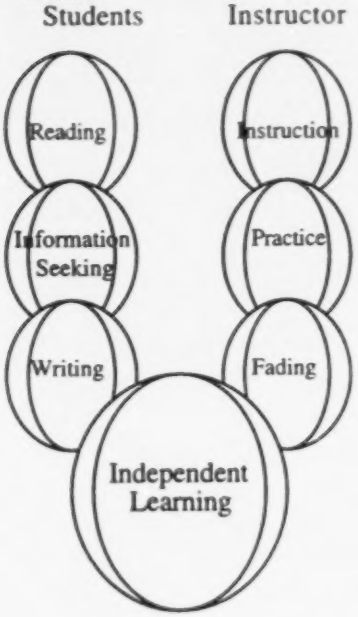
Graphic Examples

Our curriculum development was rooted in schema interactive processing, combining both top-down and bottom-up thinking, based on the power of graphics to represent thinking processes and structures of text, and focused on the direct instruction of commonly recognized graphics. As a result, two families of graphical representations were designed: top-down and bottom-up graphics.

Top-down Graphics

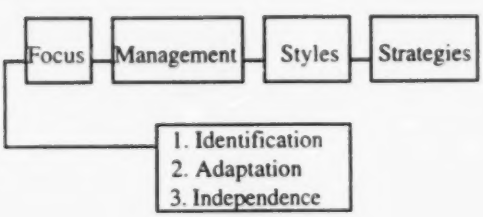
The first graphic organizer (see Figure 1) that represents the teaching-learning in the course LS 101: Learning Strategies is a top-down organizer, for it represents a model for a process, the process of becoming an independent learner.

Figure 1
GRAPHIC ORGANIZER
Chain



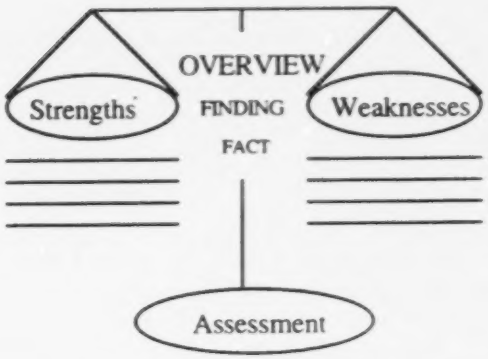
The link in the chain that represents independent learning is another process. It is pictured in the top-down planning chart shown in Figure 2. In this graphic, the characteristics of an independent learner are accompanied by the steps to follow for each of those characteristics.

Figure 2
LEARNING INDEPENDENCE
Planning Chart



The information literacy link in the course overview graphic (see Figure 1), another top-down process, is represented by a balance scale (see Figure 3).

Figure 3
INFORMATION LITERACY
Weighing Arguments



One final example, the reading link in the course overview graphic (see Figure 1), another top-down process, is represented by the concept map.

Figure 4
READING
Concept Map

Bottom-up Graphics

The following examples of bottom-up graphics represent the details that are identified and viewed to make a statement or represent an idea. One aspect of management (see Figure 2), student use of time, can be pictured in a pie chart (see Figure 5).

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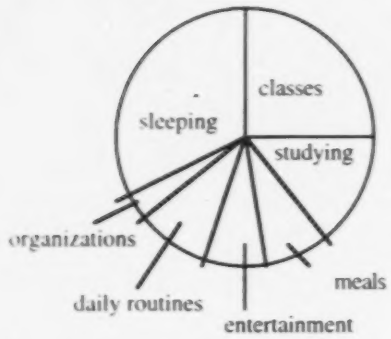
Figure 5
TIME MANAGEMENT
Pie Chart



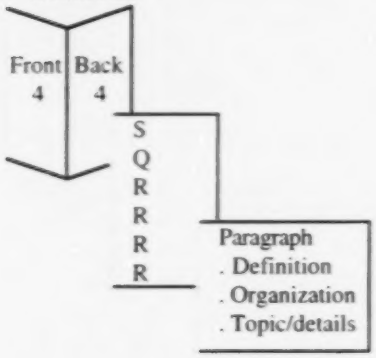
Some reading strategies guide information processing before, during, and after reading and permit the storage of knowledge as it is extracted (Sticht & McDonald,1992). The following reading strategy involves the identification of characteristics, subjects, topics, or issues. The matrix is an appropriate bottom-up graphic representation (see Figure 6).

Figure 6
READING COMPARE/CONTRAST
Matrix

	#1	#2	#3	#4	#5
Factor 1	+	+	+	+	-
Factor 2	+	-	-	-	+
Factor 3	+	+	+	+	+
Factor 4	+	+	+	+	-
Factor 5	-	-	+	-	+

After several standard graphic representations have been taught, practiced, and generalized, other graphic forms, including pictures and symbols, are introduced. For example, the graphic in Figure 7 pictures a textbook to represent the consideration of locational skills in a book, a single page for the survey method for chapters, and the narrow sheet picturing a paragraph. The dots are symbols representing the acronym DOT.

Figure 7
READING STRATEGY
Pictorial



Reading and studying with appropriate graphic organizers in mind can facilitate understanding of relationships and the recognition of critical details. Moreover, when students are guided to construct their own graphic organizers, they become more actively involved in thinking and processing text (Jones, Pierce, & Hunter, 1989). Consequently, as students read and write in the accompanying foundational studies course, they are encouraged to design and use graphic organizers in those processes.

A Fitting Conclusion

Graphic organizers are visual representations of thinking. Because making meaning while reading is an interactive process, graphics facilitated our students' thinking about thinking and understanding the relationships of ideas within text in our course. Our students identified as at-risk have benefitted according to our informal assessments of their skills and their positive journal responses that show they are generalizing their new learning. A line continuum was used as a self-appraisal of their use of strategies in literacy tasks before they received instruction and guidance in LS 101. The final response to that line continuum at the end of this term promises to be an interesting graphic display measuring their learning!

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